

FORM PTO-1390

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE
TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER:
JL/SG D.00-0437

U.S. APPL. NO. (If known, see 37 CFR 1.5)
10/018994

INTERNATIONAL APPLICATION NO.:
PCT/FR00/01705

INTERNATIONAL FILING DATE:
21 JUNE 2000 (21.06.00)

PRIORITY DATE CLAIMED:
23 JUNE 1999 (23.06.99)

TITLE OF INVENTION: METHOD FOR DECONTAMINATING WASTE, SEMI-SYNTHETIC OR SYNTHETIC MINERAL OILS

APPLICANT(S) FOR DO/EO/US: Richard DEUTSCH

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
 2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
 3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
 4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
 5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau--**in French language**).
 - b. ☐ has been transmitted by the International Bureau. (see attached copy of PCT/IB/308)
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
 6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
 7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)).
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
 8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
 9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
 10. ☐ A translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).
- Item 11. to 16. below concern document(s) or information included:
11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
 12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
 13. ☒ A **FIRST** preliminary amendment.
 14. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
 15. ☐ A substitute specification.
 16. ☒ A change of power of attorney and/or address letter.
 16. ☒ Other items or information: INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT/IPEA/409), INTERNATIONAL SEARCH REPORT (PCT/ISA/210), APPLICATION DATA SHEET, ABSTRACT

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)		INTERNATIONAL APPLICATION NO.		ATTORNEY'S DOCKET NO.	
10/018994		PCT/FR00/01705		JL/SG D.00-0437	

<p>17. <input checked="" type="checkbox"/> The following fees are submitted:</p> <p>BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)): Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$ 1,040.00</p> <p>International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$ 890.00</p> <p>International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$ 740.00</p> <p>International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$ 710.00</p> <p>International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$ 100.00</p> <p style="text-align: right;">ENTER APPROPRIATE BASIC FEE AMOUNT =</p> <p>Surcharge of \$130.00 for furnishing the oath or declaration later than 30 months from the earliest claimed priority date (37 CFR 1.492(e)).</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">CLAIMS</th> <th style="width: 20%;">NUMBER FILED</th> <th style="width: 20%;">NUMBER EXTRA</th> <th style="width: 20%;">RATE</th> <th style="width: 25%;">\$</th> </tr> </thead> <tbody> <tr> <td>Total claims</td> <td>5 - 20 =</td> <td>0</td> <td>X \$18.00</td> <td>\$</td> </tr> <tr> <td>Independent claims</td> <td>1 - 3 =</td> <td>0</td> <td>X \$84.00</td> <td>\$</td> </tr> <tr> <td colspan="3">MULTIPLE DEPENDENT CLAIMS(S) (if applicable)</td> <td>+ \$280.00</td> <td>\$</td> </tr> <tr> <td colspan="4" style="text-align: right;">TOTAL OF ABOVE CALCULATIONS =</td> <td>\$ 1020.00</td> </tr> <tr> <td colspan="4">Reduction of 1/2 for filing by small entity, if applicable. Applicant claims Small Entity Status under 37 CFR 1.27.</td> <td style="text-align: center;">+</td> </tr> <tr> <td colspan="4" style="text-align: right;">SUBTOTAL =</td> <td>\$ 1020.00</td> </tr> <tr> <td colspan="4">Processing fee of \$130 for furnishing the English translation later than months from the earliest claimed priority date (37 CFR 1.492(f)).</td> <td style="text-align: center;">+</td> </tr> <tr> <td colspan="4" style="text-align: right;">TOTAL NATIONAL FEE =</td> <td>\$ 1020.00</td> </tr> <tr> <td colspan="4">Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property</td> <td style="text-align: center;">+</td> </tr> <tr> <td colspan="4" style="text-align: right;">TOTAL FEES ENCLOSED =</td> <td>\$ 1020.00</td> </tr> </tbody> </table> <div style="display: flex; justify-content: flex-end; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">Amount to be refunded:</div> <div style="border: 1px solid black; padding: 5px;">charged:</div> </div>	CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$	Total claims	5 - 20 =	0	X \$18.00	\$	Independent claims	1 - 3 =	0	X \$84.00	\$	MULTIPLE DEPENDENT CLAIMS(S) (if applicable)			+ \$280.00	\$	TOTAL OF ABOVE CALCULATIONS =				\$ 1020.00	Reduction of 1/2 for filing by small entity, if applicable. Applicant claims Small Entity Status under 37 CFR 1.27.				+	SUBTOTAL =				\$ 1020.00	Processing fee of \$130 for furnishing the English translation later than months from the earliest claimed priority date (37 CFR 1.492(f)).				+	TOTAL NATIONAL FEE =				\$ 1020.00	Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				+	TOTAL FEES ENCLOSED =				\$ 1020.00	<p>CALCULATIONS PTO USE ONLY</p>
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a.	<input checked="" type="checkbox"/>	A check in the amount of \$ 1020.00 to cover the above fees is enclosed.
b.	<input type="checkbox"/>	Please charge my Deposit Account No. 25-0120 in the amount of \$ to cover the above fees. A duplicate copy of this sheet is enclosed.
c.	<input checked="" type="checkbox"/>	The Commissioner is hereby authorized to charge any additional fees which may be required by 37 CFR 1.16 and 1.17, or credit any overpayment to Deposit Account No. 25-0120 . A duplicate copy of this sheet is enclosed.

SEND ALL CORRESPONDENCE TO:

YOUNG & THOMPSON
 745 South 23rd Street
 2nd Floor
 Arlington, VA 22202
 (703) 521-2297
 facsimile (703) 685-0573
Customer Number: 000466

December 26, 2001

By Thomas W. Perkins
 Thomas W. Perkins
 Attorney for Applicant
 Registration No. 33,027

10/018994

531 Rec'd PCT/PTC 26 DEC 2001
PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Richard DEUTSCH

Box Non-fee Amendment

Serial No. (unknown)

GROUP

Filed herewith

Examiner

METHOD FOR DECONTAMINATING WASTE,
SEMI-SYNTHETIC OR SYNTHETIC MINERAL OILS

PRELIMINARY AMENDMENT

Commissioner for Patents

Washington, D.C. 20231

Sir:

Prior to the first Official Action and calculation of the filing fee, please amend the above-identified application as follows:

IN THE CLAIMS:

Please amend claims 4-5 as follows:

--4. (Amended) Process according to claim 1, characterized in that the de-coloration of step e is carried out with a clay.

5. (Amended) Process according to claim 1, characterized in that the coagulating agent of step c is selected from the group comprising trivalent metal hydroxides, amines and polyamines, and the acid used to bring the pH to an acid value is an organic acid or a strong inorganic acid.--

Richard DEUTSCH

IN THE ABSTRACT:

Please delete the abstract as originally filed which appears on the cover sheet of the Published Application. Add new abstract as enclosed herewith on a separate sheet.

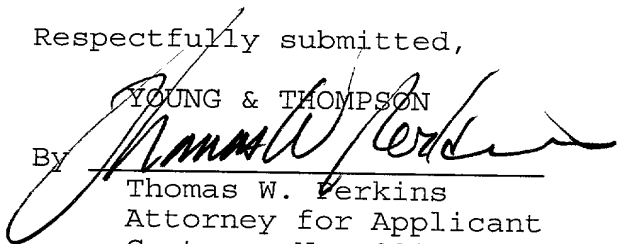
REMARKS

Claims 4-5 were amended to correct multiple dependency. Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE".

Respectfully submitted,

YOUNG & THOMPSON

By


Thomas W. Perkins
Attorney for Applicant
Customer No. 000466
Registration No. 33,027
745 South 23rd Street
Arlington, VA 22202
703/ 521-2297

December 26, 2001

"VERSION WITH MARKINGS TO SHOW CHANGES MADE"

Claims 4-5 have been amended as follows:

4. (Amended) Process according to ~~one of claims 1 to 3, claim 1,~~ characterized in that the de-coloration of step e is carried out with a clay.

5. (Amended) Process according to ~~one of claims 1 to 4, claim 1~~, characterized in that the coagulating agent of step c is selected from the group comprising trivalent metal hydroxides, amines and polyamines, and the acid used to bring the pH to an acid value is an organic acid or a strong inorganic acid.

ABSTRACT

A method for decontaminating waste lubricating oils that includes: a) pouring the oils to be treated in a container, adding thereto 1-2 wt.% of glycol, heating at 60°C, stirring and allowing to cool and decanting; b) drawing the aqueous phase, adding to the oily phase a chelating agent, in sodium solution with a pH<7, preferably pH 6, bringing to 60-80°C, stirring for at least one hour, then centrifuging; c) adding the oily phase a coagulating agent; d) adding to the oily phase barium hydroxide in water to precipitate the sulphate and phosphate ions in the form of barium sulphate and phosphate which is separated; e) performing a fractionated distillation to recuperate the basic constituents of the oils, and optionally carrying out a discoloration of the resulting products.

PROCESS FOR THE DECONTAMINATION OF WASTE SEMI-SYNTHETIC AND
SYNTHETIC MINERAL OILS

The present invention relates to a process which permits decontaminating modern lubricating oils by
5 extraction of heavy metals, sulfurated compounds and phosphated compounds.

10 Lubricating oils have been the subject of very great development these last fifteen years. This development is particularly due to the increase in the performance of heat engines placed in service in recent years.

For several tens of years, lubrication has been performed with a basic oil simply extracted by distillation from raw petroleum in a refinery.

15 Very rapidly, the lubricating performances have been improved by additives. A new increase of performance has been obtained by the addition of new additives, particularly polymers which have the function of thickening the oil at high temperature.

20 Another increase in performance has been obtained by adding synthesis oils of the polyalphaolefin type. These synthesis oils permit lowering noticeably the freezing point of the lubricating oils (down to -50°C , if necessary).

Modern lubricating oils are comprised at present:

- of mineral oil called a basic oil,
- of mineral oils having been subjected to a hydrogenation treatment, which converts them to oils with a high index of viscosity,
- 5 - synthesis oils of the polyalphaolefin type,
- additives.

After use, the lubrication performance of the oils is very much lessened, which requires changing these oils.

10 The waste lubrication oils come principally from the operation of emptying automobile motors. These used oils are extremely toxic and the law requires their collection and elimination at designated centers in all of Europe and the North American countries.

15 The used oil, also called oil emptied from motors, is comprised of the above ingredients to which will be added dirt due to the operation of the motors at the temperatures of use (more than 300°C). Thus, this oil contains volatile constituents (water, gasoline, diesel oil), compounds soluble in oil formed by oxidation (resins, metallic soaps, viscosity index additives, organometallic compounds),
20 compounds insoluble in oil (particles of carbon, atmospheric dust, metals, metallic oxides, lead oxides held in suspension by detergents added to the oils), additives enclosing a metal, dispersant additives, ash-free

additives, anti-oxidant additives and anti-corrosant additives, metals resulting from channeling or connections (iron, copper, lead), bearings (silver, cadmium), or combustibles (tetraethyl lead, among others).

5 The list of products cited is not limiting but given by way of example. The descriptions are given by way of illustration but are not limiting.

10 The oil changes in color by oxidizing action in the motors, by formation of colored varnishes or under the action of sulfur.

15 The regeneration and recycling of the oils has been a flourishing industry until the beginning of the 1990s, but has fallen off because of the presence in waste oils of polymers which have rendered redistillation very complicated.

 Thus, in the course of the redistillation operation of these used oils, evaporation of the oily phase leaves the polymers only, at the bottom of the distillation column.

20 As long as these polymers are in the distillation column at a temperature higher than 150°C, they remain in liquid phase, but as soon as they leave the distillation column and enter into a heat exchanger, they solidify and, at a temperature below 100°C, they block all the distillation process.

This phenomenon of freezing up of the polymers in the heat exchangers has led to the shutdown or stoppage of use of most of the regeneration facilities for waste oils throughout the world.

5 Another phenomenon has run head-on into the regeneration industry.

10 Thus, elimination of the heavy metals, the metalloids, the complex products, the tars, the colloidal residues and other contents of used motor oils is at present carried out by combined action of heat, sulfuric acid, decoloring earths, filtration, centrifugation and distillation.

15 This technique using sulfuric acid is beginning to become illegal in several European countries (Spain, Benelux, Great Britain...), which shuts down the regeneration units using this technique.

Moreover, this technique using sulfuric acid in combination with very high temperature distillation leads to the production of polynuclear aromatic products considered as carcinogenic, the authorities imposing their
20 strict limitation.

All of these facts produces the following paradoxical situation: used oils which are composed of more and more expensive products, and which could permit by their

recovery substantial profits, are actually directed toward incineration in cement instead of being recycled.

Moreover, the mineral and synthetic oils contained in used oils keep their high specific qualities after their use, because they are very thermally stable.

Moreover, the technique of regeneration used at present, using high distillation temperatures (greater than 350°C) generates phenomena of cracking giving a strong odor to the regenerated oil.

This strong odor leads to a very great decrease in the sales price of regenerated oil. These phenomena of cracking also generate a coloration of the oils, requiring a strong decoloration treatment with decolorizing earths, giving rise to a substantial increase in production costs.

This substantial increase is due to the need to withdraw and eliminate the decoloring earths (of the activated clay type) that are used. Finally, the discharge after withdrawal gives rise more and more to problems.

Given the investments involved, it is important to use a process permitting better economics of recycling.

The invention solves this technical and economic problem by a process for decontaminating lubricating oils, containing mineral oils and semi-synthetic and synthetic

oils, that have been used, so-called waste oils, characterized by the following steps:

a) placing the oils to be treated in a receptacle, adding to them 1 to 2% by weight of glycol, heating to 5 60°C, agitating then leaving to cool and decanting, to produce an aqueous phase containing the glycol and the phenolic products extracted from the oily phase as well as the materials in suspension and the rest of the silicone oil that may be present as an anti-foaming additive,

10 b) withdrawing the aqueous phase, adding to the oily phase a chelating agent in a stoichiometric quantity or slightly greater than the stoichiometric quantity relative to the compounds to be eliminated in this step, in sodium solution at a pH not exceeding 7, preferably at pH 6, 15 bringing the temperature to 60-80°C, agitating for at least one hour, then centrifuging to separate from the oily phase the sodium solution containing the chelated heavy metals extracted from the oils,

c) adding to the oily phase obtained after 20 centrifugation a coagulant, in a stoichiometric quantity or slightly greater than the stoichiometric quantity relative to the compounds to be eliminated in this step, in aqueous acid medium to extract the iron, and separating the thus-obtained aqueous phase,

d) adding to the oily phase barium hydroxide in suspension or in solution, in a stoichiometric quantity or slightly greater than the stoichiometric quantity relative to the compounds to be eliminated this step, in water, to precipitate the sulfate and phosphate ions in the form of barium sulfate and phosphate which is separated by decantation or by centrifugation,

e) carrying out fractional distillation to recover the basic constituents of the oils, and if desired decoloration of the products thus obtained.

Steps b and c, and c and d, can be reversed if step d is carried out after step b.

Preferably, step b is repeated after step c. Preferably, the decoloration in step e is carried out with a clay.

Preferably, the coagulating agent in step c is selected from the group comprising trivalent metal hydroxides, amines and polyamines, and the acid used to bring the pH to an acid value is an organic acid or a strong inorganic acid.

When the waste oils are only from automotive vehicles, which is to say when they have not been mixed - for problems of transport - with other used oils of industrial origin, it is possible to carry out simultaneously the

steps b and c, which is to say to carry out simultaneously the addition of the chelating agent and of the coagulant.

The problem of decontamination of the used oils is as follows: it is necessary to eliminate the metals, the heavy metals, a part or all of the sulfur compounds, the phosphate compounds, the chlorine, the chlorinated compounds and the phenolic compounds.

In an industrial recycling process for waste oils, said oils arrive in a collection truck, of the tank truck type, and the waste oils (or used oils), are then transferred into a storage reservoir.

During their collection, these oils are generally mixed with water (about 4 to 5%).

From this reservoir, the decontamination process consists in:

taking up the used oils by pumping into a cylindrical reservoir with a conical base, provided with a heating coil and an agitation means of the counter-rotating helix type or compressed air type.

The used oil is mixed with 1 to 2% of glycol to eliminate the phenolic compounds. The whole is brought to a temperature of at least 60°, agitated, then left to stand to obtain separation of the phases by decantation.

The aqueous phase is in the bottom of the reservoir, which is to say in the conical portion, provided with a withdrawal valve; this aqueous phase contains the glycols mixed with the phenolic products and all the particles in suspension (iron, carbon, sand, etc...) which will settle out, as well as the residual silicone oil (anti-foaming additive).

10 This aqueous phase mixed with these components is withdrawn so as to leave only the oil phase in the reservoir.

Then chelating agents are added in aqueous sodium solution and at a pH of 6 or slightly more.

15 The whole is brought to a temperature comprised between 60°C and 80°C and agitating for at least one hour to complex with heavy metals (including zinc) by chelating agents.

At the end of this step, the whole is centrifuged so as to separate the oil from the complexed heavy metals which are in the aqueous solution.

20 This operation extracts between 80 and 90% of the heavy metals whilst the sodium neutralizes the chlorine.

After centrifugation, the oily phase is directed into another reservoir of the conical bottom type. There is

then added a small quantity of a coagulant in acid medium, which permits extraction of the iron.

The coagulant is selected for example from the group comprising trivalent metal hydroxides, amines and polyamines and the acid used to bring the pH to an acid value is an organic acid or a strong inorganic acid.

In the following step, there is added barium hydroxide in suspension in water, this hydroxide precipitating the phosphate and sulfate ions.

10 It is to be noted that the use of this barium hydroxide permits the use of sulfurated chelating agents, because its action permits controlling the level of residual sulfur in the oils, according to the desiderata of the final client, who may require variable residual sulfur
15 levels in the oil, but not to exceed a threshold comprised generally between 3000 and 3500 ppm.

The whole is then decanted or centrifuged, which permits obtaining a decontaminated oil which can be distilled by fractionation.

20 The decontamination, because of the elimination of zinc and its derivatives, permits a distillation which is easier to conduct, because the phenomena of fouling due to the recombination of zinc with the products in the bottom of the column, are eliminated. If a higher degree of

purity of the oil is required, a phase of mixing with chelating agents can if desired be repeated, if necessary.

According to the composition of the treated oils or the specifications for the desired final product, the phases of the treatment can be modified, for example the treatment with barium hydroxide can precede the phase of eliminating the heavy metals.

Another advantage of this decontamination treatment is that it permits replacing in the final treatment the activated de-coloring earths by a simple clay (bentonite and derivatives). The advantage cost-wise is considerable, a de-coloring earth costing 6 to 8 times the cost of a clay.

The combination of these operations is necessary to bring the oils to the specifications dictated by the market.

Moreover, this decontamination carried out in an initial phase before distillation, contrary to the methods used until now, permits maintaining the distillation unit and holding it at a very low temperature, which permits avoiding the phenomena of cracking of the polymers and hence permits separating the oil much more easily and leading to a fractionation much easier to perform.

CLAIMS

1. Process for decontaminating used lubricating oils, containing mineral oils and semi-synthetic and synthetic oils, so-called waste oils, characterized by the following
5 steps:

a) placing the oils to be treated in a receptacle, adding to them 1 to 2% by weight of glycol, heating to 60°C, agitating and then leaving to cool and decant, to produce an aqueous phase containing the glycol and the
10 phenolic products extracted from the oily phase, as well as the material in suspension and the rest of the silicone oil that may be present as an anti-foaming additive,

b) withdrawing the aqueous phase, adding to the oily phase a chelating agent in a stoichiometric quantity or a
15 quantity slightly greater than stoichiometric relative to the compounds to be eliminated in this step, in sodium solution at a pH not exceeding 7, preferably at pH 6, bringing the temperature to 60-80°C, agitating for at least one hour, then centrifuging to separate from the oily phase
20 the sodium solution containing the chelated heavy metals extracted from the oils,

c) adding to the oily phase obtained after centrifugation a coagulant, in a stoichiometric quantity or slightly greater quantity than stoichiometric relative to

the compounds to be eliminated in this step, in aqueous acid medium to extract iron, and separating the obtained aqueous phase,

5 d) adding to the oily phase barium hydroxide in suspension or in solution, in a stoichiometric quantity or slightly greater than the stoichiometric quantity relative to the compounds to be eliminated in this step, in water to precipitate the sulfate and phosphate ions in the form of barium sulfate and phosphate which is separated by
10 decantation or by centrifugation,

e) carrying out a fractional distillation to recover the basic constituents of the oils, and if desired a decoloration of the products thus obtained,

15 steps b and c, and c and d, being able to be reversed provided that step d is carried out after step b.

2. Process according to claim 1, characterized in that if necessary step b is repeated after step c.

20 3. Process according to claim 1, characterized in that step b and step c are carried out simultaneously.

4. Process according to one of claims 1 to 3, characterized in that the de-coloration of step e is carried out with a clay.

5 5. Process according to one of claims 1 to 4, characterized in that the coagulating agent of step c is selected from the group comprising trivalent metal hydroxides, amines and polyamines, and the acid used to bring the pH to an acid value is an organic acid or a
10 strong inorganic acid.

15

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tions, se référer aux "Notes explicatives relatives aux codes et
abréviations" figurant au début de chaque numéro ordinaire de
la Gazette du PCT.*

(71) Déposant et

(72) Inventeur: DEUTSCH, Richard [FR/FR]; 2, rue Manet,
F-78290 Croissy (FR).

(54) Title: METHOD FOR DECONTAMINATING WASTE SEMI-SYNTHETIC OR SYNTHETIC MINERAL OILS

(54) Titre: PROCEDE DE DECONTAMINATION DES HUILES MINERALES SEMI-SYNTHETIQUES ET SYNTHETIQUES
USAGEES

(57) Abstract: The invention concerns a method for decontaminating waste lubricating oils which consists in: a) pouring the oils to be treated in a container, adding thereto 1-2 wt. % of glycol, heating at 60 °C, stirring and allowing to cool and decanting; b) drawing the aqueous phase, adding to the oily phase a chelating agent, in sodium solution with a pH < 7, preferably pH 6, bringing to 60-80 °C, stirring for at least one hour, then centrifuging; c) adding to the oily phase a coagulating agent; d) adding to the oily phase barium hydroxide in water to precipitate the sulphate and phosphate ions in the form of barium sulphate and phosphate which is separated; e) performing a fractionated distillation to recuperate the basic constituents of the oils, and optionally carrying out a discoloration of the resulting products.

(57) Abrégé: L'invention concerne un procédé de décontamination des huiles de lubrification usagées, où: a) on met les huiles à traiter dans un récipient, on leur ajoute 1-2 % en poids de glycol, on chauffe à 60 °C, on agite puis on laisse refroidir et décanter; b) on soutire la phase aqueuse, on ajoute à la phase huileuse un agent chélatant, en solution sodée à un pH < 7, de préférence pH 6, on porte à 60°-80 °C, on agite au moins une heure, puis on centrifuge; c) on ajoute à la phase huileuse un coagulant; d) on ajoute à la phase huileuse de l'hydroxyde de baryum dans de l'eau pour faire précipiter les ions sulfate et phosphate sous forme de sulfate et de phosphate de baryum que l'on sépare; e) on effectue une distillation fractionnée pour récupérer les constituants de base des huiles, et éventuellement une décoloration des produits ainsi obtenus.

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INVENTOR INFORMATION

Inventor One Given Name:: RICHARD
Family Name:: DEUTSCH
Postal Address Line One:: 2, RUE MANET
City:: CROISSY
Country:: FRANCE
City of Residence:: CROISSY
Country of Residence:: FRANCE
Postal or Zip Code:: F-78290
Citizenship Country:: FRANCE

CORRESPONDENCE INFORMATION

Correspondence Customer Number:: 000466
Name Line One:: YOUNG & THOMPSON
Address Line One:: 745 SOUTH 23RD STREET
Address Line Two:: SECOND FLOOR
City:: ARLINGTON
State or Province:: VIRGINIA
Country:: U.S.A.
Postal or Zip Code:: 22202
Telephone:: 703-521-2297
Fax One:: 703-685-0573
Fax Two:: 703-979-4709

APPLICATION INFORMATION

Title Line One:: METHOD FOR DECONTAMINATING WASTE, SEMI-
Title Line Two:: SYNTHETIC OR SYNTHETIC MINERAL OILS
Total Drawing Sheets:: NONE
Formal Drawings?:: N/A
Application Type:: UTILITY
Docket Number:: JL/SG D.00-0437

REPRESENTATIVE INFORMATION

Representative Customer Number:: 000466

CONTINUITY INFORMATION

This application is a:: 371 OF
>Application One:: PCT/FR00/01705
Filing Date:: 21 JUNE 2000

PRIOR FOREIGN APPLICATION

Foreign Application One:: 99/08021
Filing Date:: 23 JUNE 1999
Country:: FRANCE
Priority Claimed:: YES

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHOD FOR DECONTAMINATING WASTE, SEMI-SYNTHETIC OR SYNTHETIC MINERAL OILS

the specification of which: *(check one)*

REGULAR OR DESIGN APPLICATION

- ☐ is attached hereto.
- ☒ was filed on December 26, 2001 as application Serial No. _____ and
was amended on _____ (if applicable).

PCT FILED APPLICATION ENTERING NATIONAL STAGE

- ☒ was described and claimed in International application No. PCT/FR00/01705 filed on
June 21, 2000 and as amended on _____ (if any).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

PRIORITY CLAIM

I hereby claim foreign priority benefits under 35 USC 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN APPLICATION(S)

Country	Application Number	Date of Filing (day, month, year)	Priority Claimed
FRANCE	99/08021	23 JUNE 1999 (23.06.99)	YES

(Complete this part only if this is a continuing application.)

I hereby claim the benefit under 35 USC 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of 35 USC 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)

(Filing Date)

(Status--patented, pending, abandoned)

POWER OF ATTORNEY

The undersigned hereby authorizes the U.S. attorney or agent named herein to accept and follow instructions from **CABINET LOYER** as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorney or agent and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorney or agent named herein will be so notified by the undersigned.

As a named inventor, I hereby appoint the registered patent attorneys represented by Customer No. **000466** to prosecute this application and transact all business in the Patent and Trademark Office connected therewith, including: **Robert J. PATCH, Reg. No. 17,355, Andrew J. PATCH, Reg. No. 32,925, Robert F. HARGEST, Reg. No. 25,590, Benoît CASTEL, Reg. No. 35,041, Eric JENSEN, Reg. No. 37,855, Thomas W. PERKINS, Reg. No. 33,027, and Roland E. LONG, Jr., Reg. No. 41,949,**

c/o YOUNG & THOMPSON,
Second Floor,
745 South 23rd Street,
Arlington, Virginia 22202.



00466

PATENT TRADEMARK OFFICE

Address all telephone calls to Young & Thompson at 703/521-2297. Telefax: 703/685-0573.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor: **Richard DEUTSCH**
(given name, family name)

Inventor's signature Richard Deutsch

Date 01.23.2002

Residence: **Croissy, FRANCE**

Citizenship: **FRANCE**

Post Office Address: **2, Rue Manet
78290 Croissy, FRANCE**

Full name of second joint inventor, if any:
(given name, family name)

Inventor's signature _____ Date _____

Residence: _____ Citizenship: _____

Post Office Address: _____

Full name of third joint inventor, if any:
(given name, family name)

Inventor's signature _____ Date _____

Residence: _____ Citizenship: _____

Post Office Address: _____